

AMENDMENT TO THE DETAILED DESCRIPTION

At page 1, after the Title and before the heading "BACKGROUND OF THE INVENTION" insert the following new paragraph:

-- CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of a priority under 35 USC 119(a)-(d) to French Patent Application No. 99 02711 filed March 4, 1999, the entire contents of which are hereby incorporated by reference. --

Replace the paragraph beginning at page 1, line 6 and ending at page 1, line 9 with the following amended paragraph:

-- The control of radiological image exposure usually ~~consists of~~ comprises keeping the brightness of the visible images constant. This principle is derived from the first constant sensitivity image receptors, notably, radiographic films for static images and fluorescent screens for fluoroscopy.--

Replace the paragraph beginning at page 1, line 21 and ending at page 2, line 2 with the following amended paragraph:

-- The method used for brightness or entrance dose control ~~consists of~~ comprises using the signal supplied by a sensor, the signal being representative of the entrance dose or brightness, and comparing it to a reference corresponding to the desired level. The result of that comparison is entered in a device controlling the parameters of the X-rays used to obtain the image (supply voltage of the tube, supply current of the tube or product of the current by time), for the purpose of restoring the level desired. --

Replace the paragraph beginning at page 2, line 9 and ending at page 2, line 10 with the following amended paragraph:

-- If the distance is increased, ~~the~~ a control loop will produce an increase in the X-ray parameters, and inverts it if the distance is reduced. --

Replace the paragraph beginning at page 2, line 21 and ending at page 2, line 27 with the following amended paragraph:

-- When the change of enlargement is made through a change of SID, the resulting effect on the signal-to-noise ratio will depend on the combination of effects of the change in intensity of the source caused by the modification of SID and enlargement respectively. In all cases, the change of geometries by displacement of the image receptor opposite the object and by displacement of the object in the direction of the source will entail a significant increase in the X-ray dose received by the object. --

Replace the paragraph beginning at page 3, line 1 and ending at page 3, line 2 with the following amended paragraph:

-- An embodiment of the ~~The~~ present invention is an apparatus and method ~~making possible a~~ for variation of enlargement without increasing the X-ray dose received. --

Replace the paragraph beginning at page 3, line 3 and ending at page 3, line 12 with the following amended paragraph:

-- The apparatus and method serves to adjust the entrance dose (or entrance exposure) of a radiology apparatus of the type containing a source of radiation of an X-ray beam, a means of detection of the X-ray beam after it has crossed an object having to be visualized, and a means of visualization connected to the means of detection. The distance (SOD) between the radiation source and the object is estimated and, when the distance (SID) between the radiation source and the object or the distance between the radiation source and the means of detection varies, the entrance dose is modified according to these distances in order to maintain an appreciably constant equivalent dose in the plane containing the object, the distance (SID) between the radiation source and the means of detection being known.

Cancel/delete the heading between page 3, line 15 and page 3, line 16 and insert the following heading between page 3, line 12 and page 3, line 13:

-- BRIEF DESCRIPTION OF THE DRAWING --

Replace the paragraph beginning at page 3, line 22 and ending at page 3, line 23 with the following amended paragraph:

-- Figure 5 is a schematic view of a radiology apparatus ~~with~~ with C-arms with isocentric movements. --

Replace the paragraph beginning at page 4, line 1 and ending at page 3, line 9 with the following amended paragraph:

-- As can be seen in Figure 1, the radiology apparatus comprises an X-ray tube 1 capable of emitting an X-ray beam 2 having an axis of propagation 16. The X-ray tube 1 is supplied by a high-voltage source 3 controlled by a control unit 4. Placed on the path of the X-ray beam 2 are an object 5 having to be studied, for example, a part of a object's body, and a digital type image receptor 6, for example, a solid-state receptor, capable of emitting on output on a line 7 a digital signal representing the image obtained by the image receptor 6, which picks up the X-ray beam after it has crossed the object 5. The line 7 can be connected to image processing means and to display means, such as a screen, not represented. --

Replace the paragraph beginning at page 4, line 26 and ending at page 5, line 3 with the following amended paragraph:

-- In an embodiment of the present invention, the distance between the X-ray tube and the detail or details of interest in the object is estimated and when the geometry changes, the image receptor entrance dose is changed, taking into account the SID and the SOD, for the purpose of reducing the variation of equivalent dose in the plane containing the details of interest in the object 5 consecutive to the change of the SID and SOD. --

Replace the paragraph beginning at page 5, line 12 and ending at page 5, line 21 with the following amended paragraph:

-- The image receptor 6 is mobile perpendicular to the axis of the X-ray beam in the direction illustrated by the arrow 13. The plane 14 perpendicular to the axis 16 of the X-ray beam and in which the details of interest of the object's body are situated is then estimated and the SOD between the X-ray tube 1 and the detail of the object's body is deduced. The SID between the X-ray tube 1 and the image receptor 6 depends on the geometry of the radiology apparatus and is also known. One can then act on the supply parameters of the X-ray tube 1 so as to keep the equivalent dose received in the plane 14 constant, whatever the course of the SID, preferably by using a correction factor corresponding to the ratio between the square of the SOD and the square of the SID. --

Replace the paragraph beginning at page 7, line 25 and ending at page 7, line 29 with the following amended paragraph:

-- An embodiment of the ~~The~~ invention therefore provides a method and apparatus to reduce significantly the entrance dose received by the object, compared to the previously known methods. It is thus possible to uncouple the geometric aspect of enlargement from the possible improvement of the image supplied by an increase in radiation related to an element of the anatomy.--